### Maintenance of NR-based Access to Unlicensed Spectrum

#### Physical Layer Signals and Channels

##### Initial access signals/channels

[R1-2001649](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2001649.zip) Remaining issues on initial access signals and channles vivo

[R1-2001702](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2001702.zip) Remaining issues on the initial access signals for NR-U ZTE, Sanechips

[R1-2001756](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2001756.zip) Discussion on the remaining issues of initial access signal/channel OPPO

[R1-2001932](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2001932.zip) Remaining issues of initial access signals and channels for NR-U LG Electronics

[R1-2002028](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2002028.zip) Initial access signals and channels Ericsson

[R1-2002114](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2002114.zip) Initial access signals and channels for NR-U Samsung

[R1-2002224](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2002224.zip) Remaining issues on Initial Access Signals and Channels for NR-U Nokia, Nokia Shanghai Bell

[R1-2002262](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2002262.zip) Remaining issues on initial access signals/channels Spreadtrum Communications

[R1-2002575](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2002575.zip) Maintainance on the initial access signals and channels Huawei, HiSilicon

[100b-e-NR-unlic-NRU-InitSignalChannel-01] Email discussion/approval on k\_SSB indication in PBCH for SSB on sync raster and off-sync raster by 4/22; if necessary, followed by endorsing the corresponding TP by 4/28 – Jing (Qualcomm)

R1-200xxxx Email discussion on k\_SSB indication in PBCH for SSB on sync raster and off-sync raster Moderator (Qualcomm Incorporated)

Agreement:

Adopt the following text proposal for Section 7.4.3.1 of TS 38.211:

------------------------------------TP for 38.211, 7.4.3.1----------------------------------

7.4.3.1 Time-frequency structure of an SS/PBCH block

In the time domain, an SS/PBCH block consists of 4 OFDM symbols, numbered in increasing order from 0 to 3 within the SS/PBCH block, where PSS, SSS, and PBCH with associated DM-RS are mapped to symbols as given by Table 7.4.3.1-1.

In the frequency domain, an SS/PBCH block consists of 240 contiguous subcarriers with the subcarriers numbered in increasing order from 0 to 239 within the SS/PBCH block. The quantities  and  represent the frequency and time indices, respectively, within one SS/PBCH block. The UE may assume that the complex-valued symbols corresponding to resource elements denoted as 'Set to 0' in Table 7.4.3.1-1 are set to zero. The quantity  in Table 7.4.3.1-1 is given by . The quantity  is the subcarrier offset from subcarrier 0 in common resource block to subcarrier 0 of the SS/PBCH block, where is obtained from the higher-layer parameter *offsetToPointA* and the 4 least significant bits of  are given by the higher-layer parameter *ssb-SubcarrierOffset* and for SS/PBCH block type A the most significant bit of  is given by in the PBCH payload as defined in clause 7.1.1 of [4, TS 38.212]. For operation with shared spectrum channel access, 4 least significant bits of are given by the higher-layer parameter *ssb-SubcarrierOffset* and the most significant bit of is given by in the PBCH payload as defined in clause 7.1.1 of [4, TS 38.212]. If , ; otherwise, . If *ssb-SubcarrierOffset* is not provided, is derived from the frequency difference between the SS/PBCH block and Point A.



------------------------------------------------------------------------------------------------

Agreement:

Adopt the following text proposal for Section 4.1 of TS 38.213

------------------------------------ Text Proposal for 38.213, Section 4.1----------------------------

\*\*\* Unchanged text omitted \*\*\*

is either provided by *ssbPositionQCL-Relationship-r16* or, if *ssbPositionQCL-Relationship-r16* is not provided,obtained from a *MIB* provided by a SS/PBCH block according to Table 4-1 with <24 as defined in clause 7.4.3.1 of [4, 38.211].



\*\*\* Unchanged text omitted \*\*\*

-------------------------------------- End Text Proposal --------------------------------------

##### DL signals and channels

[R1-2001532](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2001532.zip) Maintainance on DL signals and channels Huawei, HiSilicon

[R1-2001650](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2001650.zip) Remaining issues on physical DL channel design in unlicensed spectrum vivo

[R1-2001703](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2001703.zip) Remaining issues on the DL channels for NR-U ZTE, Sanechips

[R1-2001757](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2001757.zip) Discussion on the remaining issues of DL signals and channels OPPO

[R1-2001902](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2001902.zip) Remaining issues on DL signals and channels for NR-U MediaTek Inc.

[R1-2001933](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2001933.zip) Remaining issues of DL signals and channels for NR-U LG Electronics

[R1-2001985](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2001985.zip) DL signals and channels for NR-unlicensed Intel Corporation

[R1-2002029](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2002029.zip) DL signals and channels Ericsson

[R1-2002054](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2002054.zip) Maintenance for DL signals and channels for NR-U Panasonic Corporation

[R1-2002115](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2002115.zip) DL signals and channels for NR-U Samsung

[R1-2002225](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2002225.zip) Remaining issues on DL signals and channels Nokia, Nokia Shanghai Bell

[R1-2002275](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2002275.zip) Remaining issues in DL signals and channels Spreadtrum Communications

[R1-2002320](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2002320.zip) Remaining issues of DL signals and channels Apple

[R1-2002381](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2002381.zip) Remaining issues and corrections on DL signals and channels for NR-U Sharp

[R1-2002528](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2002528.zip) TP for DL signals and channels for NR-U Qualcomm Incorporated

[R1-2002630](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2002630.zip) Text proposal for search space group switching Google Inc.

**R1-2002685** Feature lead summary for NR-U DL Signals and Channels Moderator (Lenovo)

[100b-e-NR-unlic-NRU-DL\_Signals\_and\_Channels-01] Email discussion/approval on processing time for switching and default SS group, including BWP switching by 4/24; if necessary, followed by endorsing the corresponding TPs by 4/30 – Alex (Lenovo)

**Q1: What processing time P1=P2 should be adopted?**

A suggestion that emerged during the last day of the email discussion gaining support (though not yet consensus) is as follows:

Proposal:

* Define two sets of P values
  + SSSG switching Capability-1: P=25/25/25 symbols for µ = 0/1/2 SCS
  + SSSG switching Capability-2: P=10/12/22 symbols for µ = 0/1/2 SCS
  + Introduce a UE capability to signal support of SSSG switching Capability-1 or SSSG switching Capability-2
* Introduce a RRC parameter to indicate which P value to be applied by a UE.

There is ongoing discussion on this proposal, and it is possible that not every company had a fair chance to review this proposal. Therefore FL suggests to allow further discussion until Monday (27 April) whether consensus on this proposal can be achieved; otherwise it is suggested to not further discuss the issue within RAN1#100bis-e.

Agreement:

The smallest subcarrier spacing of the corresponding active BWP across CCs within a CC group and the CC in which a DCI format 2\_0 triggering group switching is detected, if any, is used to determine the first slot of search space set group switching for all CCs within a CC-group.

Agreement:

SS set group 0, if configured, is applicable for a UE at least after RRC (re)configuration of SS set group by *searchSpaceGroupIdList-r16*.

[100b-e-NR-unlic-NRU-DL\_Signals\_and\_Channels-02] Email discussion/approval on special states/indications in “available RB set indication” and COT duration indication/determination by 4/23; if necessary, followed by endorsing the corresponding TPs by 4/29 – Alex (Lenovo)

R1-200xxxx Email discussion/approval on special states/indications in “available RB set indication” and COT duration indication/determination (NR-U DL Signals and Channels) Moderator (Lenovo)

TP to capture agreement on reference starting point for determining remaining channel occupancy duration (by Apr 29). Feature lead to provide candidate TP.

[100b-e-NR-unlic-NRU-DL\_Signals\_and\_Channels-03] Email discussion/approval on CSI-RS measurements including validity/presence of periodic/semi-persistent CSI-RS by 4/24; if necessary, followed by endorsing the corresponding TPs by 4/30 – Alex (Lenovo)

[100b-e-NR-unlic-NRU-DL\_Signals\_and\_Channels-04] Email discussion/approval on the following from prior meetings by 4/23 – Alex (Lenovo)

* Capture "For search space switching, limit the switching to USS and Type-3 CSS."
* Align the terminology on the RB set indicator/Available RB set Indicator in TS38.213 and TS38.212.
* Align RRC parameter list with TS38.213:
  + Configurations of availableRB-SetPerCell-r16, CO-DurationPerCell-r16 and SearchSpaceSwitchTrigger-r16 should be added in SlotFormatCombinationsPerCell,
  + Propose to RAN2 to discard the “groupId” parameter defined under searchSpaceSwitchTrigger-r16, and remove the CHOICE structure

Agreement:

Recommend to RAN2 to discard the “groupId” parameter defined under *searchSpaceSwitchTrigger-r16,* and remove the *CHOICE* structure*.*

Alex, to prepare a draft and distribute

Proposal:

Adopt the following TP for Section 10.4 of TS 38.213:

“A UE can be provided a group index for a respective Type3-PDCCH common search space set or a UE specific search space set by *searchSpaceGroupIdList-r16* for PDCCH monitoring on a serving cell.”

##### UL signals and channels

[R1-2001533](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2001533.zip) Maintainance on uplink signals and channels Huawei, HiSilicon

[R1-2001651](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2001651.zip) Remaining issues on physical UL channel design in unlicensed spectrum vivo

[R1-2001704](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2001704.zip) Remaining issues on the UL channels for NR-U ZTE, Sanechips

[R1-2001758](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2001758.zip) Discussion on the remaining issues of UL signals and channels OPPO

[R1-2001875](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2001875.zip) Remaining issues on UL signals and channels for NR-U Fujitsu

[R1-2001903](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2001903.zip) Remaining issues on UL signals and channels for NR-U MediaTek Inc.

[R1-2001934](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2001934.zip) Remaining issues of UL signals and channels for NR-U LG Electronics

[R1-2001973](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2001973.zip) Remaining issues for UL signals and channels for NR-U Lenovo, Motorola Mobility

[R1-2001986](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2001986.zip) UL signals and channels for NR-unlicensed Intel Corporation

[R1-2002030](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2002030.zip) UL signals and channels Ericsson

[R1-2002075](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2002075.zip) TP for SRS configuration CATT

[R1-2002116](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2002116.zip) UL signals and channels for NR-U Samsung

[R1-2002192](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2002192.zip) Remaining Issues on UL Signals and Channels for NR-U Nokia, Nokia Shanghai Bell

[R1-2002246](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2002246.zip) UL signals and channels ETRI

[R1-2002276](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2002276.zip) Remaining issues in UL signals and channels Spreadtrum Communications

[R1-2002321](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2002321.zip) Remaining issues of UL signals and channels Apple

[R1-2002365](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2002365.zip) TPs on uplink signals in NRU NEC

[R1-2002382](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2002382.zip) Remaining issues on UL signals/channels for NR-U Sharp

[R1-2002433](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2002433.zip) Remaining issues on UL signals and channels for NR-U NTT DOCOMO, INC.

[R1-2002529](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2002529.zip) TP for UL signals and channels for NR-U Qualcomm Incorporated

**R1-2002036** Feature Lead Summary for UL Signals and Channels Ericsson

[100b-e-NR-unlic-NRU-ULSignalsChannels-01] Email discussion/approval on the following issues

by 4/23; if necessary, followed by endorsing the corresponding TPs by 4/29 – Steve (Ericsson)

* Finalize design for FDRA field of DCI 0\_0 for UL resource allocation Type 2
* Editorial correction on interlace configuration

[100b-e-NR-unlic-NRU-ULSignalsChannels-02] Email discussion/approval on the following issues

by 4/24; if necessary, followed by endorsing the corresponding TPs by 4/30 – Steve (Ericsson)

* Capture UE procedure related to FDRA field in RAR UL grant
* Editorial correction on SRS

[100b-e-NR-unlic-NRU-ULSignalsChannels-03] Email discussion/approval on the following issues

by 4/22; if necessary, followed by endorsing the corresponding TPs by 4/28 – Steve (Ericsson)

* Rule for interlaced PUCCH allocation for a carrier without guard bands
* Editorial (but critical) corrections on PUCCH

Agreement:

Adopt TP#2 in [Draft R1-20xxxxx 100b-e-NR-unlic-NRU-ULSignalsChannels-03\_v15 – Moderator] for 38.212 Section 6.3.1.6

Agreement:

Adopt TP#3 in [Draft R1-20xxxxx 100b-e-NR-unlic-NRU-ULSignalsChannels-03\_v15 – Moderator] for 38.213 Section 9.2.2

Agreement:

Support TP#4,5,6,7 in [Draft R1-20xxxxx 100b-e-NR-unlic-NRU-ULSignalsChannels-03\_v15 – Moderator] for 38.211,212,213,214 respectively

The following would be recommended for discussion until the 28th.

* FL to update TP#1 according to company feedback. Further discuss updated TP#1 until 4/28.
* FL to draft TP to capture the consensus that the UE shall expect that useInterlacePUCCH-PUSCH is configured the same way for all configured BWPs of a serving cell. Endorsement of TP by 4/28.

#### Physical Layer Procedure

##### Channel access procedures

**R1-2002284** Feature lead summary on NR-U channel access procedures Moderator (Nokia)

[R1-2001534](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2001534.zip) Maintainance on the channel access procedure Huawei, HiSilicon

[R1-2001652](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2001652.zip) Remaining issues on the channel access procedures vivo

[R1-2001705](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2001705.zip) Remaining issues on the channel access procedure for NR-U ZTE, Sanechips

[R1-2001759](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2001759.zip) Discussion on the remaining issues of channel access procedure OPPO

[R1-2001935](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2001935.zip) Remaining issues of channel access procedure for NR-U LG Electronics

[R1-2001987](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2001987.zip) Channel access mechanism for NR-unlicensed Intel Corporation

[R1-2002031](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2002031.zip) Channel access procedures Ericsson

[R1-2002117](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2002117.zip) Channel access procedures for NR-U Samsung

[R1-2002193](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2002193.zip) Remaining Issues on Channel Access Procedures for NR-U Nokia, Nokia Shanghai Bell

[R1-2002247](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2002247.zip) Remaining issues on channel access procedures for NR-U ETRI

[R1-2002383](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2002383.zip) Remaining issues and corrections on channel access procedure for NR-U Sharp

[R1-2002405](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2002405.zip) Remaining issues on channel access for NR-U operation MediaTek Inc.

[R1-2002434](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2002434.zip) Remaining issues on channel access procedures for NR-U NTT DOCOMO, INC.

[R1-2002465](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2002465.zip) TP on shared spectrum in NR-U NEC

[R1-2002530](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2002530.zip) TP for Channel access procedures for NR unlicensed Qualcomm Incorporated

[R1-2002632](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2002632.zip) Remaining issues on channel access procedure for NR-U WILUS Inc.

[R1-2002684](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2002684.zip) COT sharing information in CG-UCI Lenovo, Motorola Mobility

[100b-e-NR-unlic-NRU-ChAcc-01] Email discussion/approval on clarifications to LBT with consecutive UL transmissions by 4/23; if necessary, followed by endorsing the corresponding TPs by 4/28 – Timo (Nokia)

Agreement:

For LBT type and CP extension, after failing to transmit first PUSCH(s) of a set scheduled by a single UL grant,

* If a UE fails to access the channel with UL Type 2B channel access, Type 2A UL channel access shall be used for the following consecutively scheduled transmissions.
* If a UE fails to access the channel prior to the first of the consecutive UL transmissions, it shall use “0” CP extension for the subsequent UL transmissions irrespective of the CP extension indicated in the scheduling grant.

Would a text proposal be needed for the above or is the plan to leave it to the editor? If a TP is needed, it can be discussed until 4/28.

Agreement:

Back-to-back transmission of GC-PUSCH and dynamically scheduled PUSCH is supported in NR-U with restrictions similar to those in LTE LAA.

Discuss the exact TP taking TP#9 in R1-2001534 as the starting point (until 4/28)

Discuss if the second change in TP7 of R1-2001534 is agreeable, possibly with some modifications until 4/28

[100b-e-NR-unlic-NRU-ChAcc-02] Email discussion/approval on clarifications to UL to DL COT sharing by 4/24; if necessary, followed by endorsing the corresponding TPs by 4/29 – Timo (Nokia)

Agreement:

For at least PUSCH transmissions with configured grants, a UE is allowed to choose between the ED threshold given by ul-toDL-CO-SharingED-Threshold-r16 and the default one. Whether a spec change is required needs further discussion. Discuss and decide the possible TPs in the next meeting.

Further discussion on TPs for Sections 4.2.1 and 4.1.3 of 37.213 based on the inputs until 4/29

Further discussion on TPs based on TP1 in R1-2002247 and the comments in the email discussion until 4/29

Finalize TP for the editorial corrections for COT sharing indication in CG-UCI until 4/29

##### Enhancements to initial access procedure

[R1-2001535](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2001535.zip) Maintainance on the initial access procedures Huawei, HiSilicon

[R1-2001653](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2001653.zip) Remaining issues on initial access procedure for NR-U vivo

[R1-2001706](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2001706.zip) Remaining issues on the initial access procedure for NR-U ZTE, Sanechips

[R1-2001760](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2001760.zip) Discussion on the remaining issues of enhancements to initial access procedure OPPO

[R1-2001936](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2001936.zip) Remaining issues of initial access and mobility for NR-U LG Electronics

[R1-2001988](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2001988.zip) Enhancements to initial access and mobility for NR-unlicensed Intel Corporation

[R1-2002032](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2002032.zip) Enhancements to initial access procedures Ericsson

[R1-2002118](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2002118.zip) Initial access procedures for NR-U Samsung

[R1-2002248](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2002248.zip) Remaining issues on initial access procedure for NR-U ETRI

[R1-2002263](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2002263.zip) Remaining issues on initial access procedure Spreadtrum Communications

[R1-2002278](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2002278.zip) On Enhancements to Initial Access Procedures for NR-U Nokia, Nokia Shanghai Bell

[R1-2002407](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2002407.zip) Remaining issues on initial access procedure for NR-U operation MediaTek Inc.

[R1-2002531](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2002531.zip) TP for Initial access and mobility procedures for NR-U Qualcomm Incorporated

**R1-2001701** Feature lead summary on NR-U enhancement to initial access procedures Moderator (Charter Communications, Inc)

[100b-e-NR-unlic-NRU-InitAccessProc-01] Email discussion/approval on following issues related to SS/PBCH blocks by 4/24; if necessary, followed by endorsing the corresponding TPs by 4/29 – Amitav (Charter)

* Finalize remaining details of parameter Q signalling and interpretation
* Correct the citation of TS 38.104 in TS 38.213 Subclause 4.1 in relation to the definition of L\_max

[100b-e-NR-unlic-NRU-InitAccessProc-02] Email discussion/approval on following issues related to RA procedure by 4/24; if necessary, followed by endorsing the corresponding TPs by 4/29 – Amitav (Charter)

* MsgA PRACH-PUSCH gap for NR-U
* Remaining details of RACH occasion validation for FBE access

[100b-e-NR-unlic-NRU-InitAccessProc-03] Email discussion/approval on following issues related to RRM/RLM by 4/23; if necessary, followed by endorsing the corresponding TPs by 4/28 – Amitav (Charter)

* TP to 38.215 for RSSI definition
* Finalize the number of OFDM symbols for RSSI measurement duration configuration

[100b-e-NR-unlic-NRU-InitAccessProc-04] Email approval of the reply LS for R1-2001237 by 4/23 - Zhipeng (Ericsson)

Agreement:

Respond to the LS from RAN2 in R1-2001237 with the following action:

* RAN1 respectfully requests that RAN2 reflect in their specifications that the two new PRACH root sequences (of length 571 and 1151) are supported in 2-step RA with shared spectrum channel access.

R1-200xxxx [DRAFT] LS Response on NR-U PRACH root sequence for 2-step RA Ericsson

[100b-e-NR-unlic-NRU-InitAccessProc-05] Email approval of the corresponding TP to address LS from RAN2 in R1-2001506 by 4/23 - Jing (Qualcomm)

##### HARQ enhancement

[R1-2001536](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2001536.zip) Maintainance on HARQ-ACK enhancement Huawei, HiSilicon

[R1-2001654](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2001654.zip) Remaining issues on HARQ operation for NR-U vivo

[R1-2001707](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2001707.zip) Remaining issues on the HARQ for NR-U ZTE, Sanechips

[R1-2001761](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2001761.zip) Discussion on the remaining issues of HARQ enhancements OPPO

[R1-2001904](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2001904.zip) Remaining issues on HARQ operation for NR-U MediaTek Inc.

[R1-2001937](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2001937.zip) Remaining issues of HARQ procedure for NR-U LG Electronics

[R1-2001974](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2001974.zip) Remaining issues for HARQ enhancement for NR-U Lenovo, Motorola Mobility

[R1-2001989](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2001989.zip) Enhancements to HARQ for NR-unlicensed Intel Corporation

[R1-2002033](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2002033.zip) HARQ enhancement Ericsson

[R1-2002119](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2002119.zip) HARQ enhancement for NR-U Samsung

[R1-2002227](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2002227.zip) Remaining issues on NR-U HARQ scheduling and feedback Nokia, Nokia Shanghai Bell

[R1-2002249](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2002249.zip) HARQ enhancement ETRI

[R1-2002306](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2002306.zip) One shot HARQ ACK feedback InterDigital, Inc.

[R1-2002384](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2002384.zip) Remaining issues and corrections on HARQ enhancement for NR-U Sharp

[R1-2002532](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2002532.zip) TP for Enhancements to Scheduling and HARQ Operation for NR-U Qualcomm Incorporated

[R1-2002631](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2002631.zip) Text proposal for enhanced dynamic HARQ procedures Google Inc.

**R1-2002696** Feature lead summary#1 on NR-U HARQ Moderator (Huawei)

[100b-e-NR-unlic-NRU-HARQ-01] Email discussion/approval on following issues related to Type-3 HARQ-ACK codebook by 4/23; if necessary, followed by endorsing the corresponding TPs by 4/29 – David (Huawei)

* Remaining details on triggering Type-3 HARQ-ACK codebook feedback with a DCI that does not schedule a PDSCH
* Clarification to remove unintended limitations on Type-3 HARQ-ACK codebook usage (when no NNK1 value was received, when the UE is configured with semi-static codebook)
* Clarification that Type-3 HARQ-ACK codebook feedback should be generated for all configured serving cells

Agreement:

* No new DCI field is introduced for requesting Type-3 HARQ-ACK feedback without scheduling a PDSCH
* For DCI Format 1\_1:
  + To signal Type-3 HARQ-ACK codebook request without scheduling PDSCH with one-shot HARQ-ACK request field with value 1 in DCI Format 1\_1 with CRC scrambled by C-RNTI or MCS-C-RNTI, use all ‘0’ FDRA for resourceAllocationType0 and all ‘1’ FDRA for resourceAllocationType 1 if resourceAllocation = dynamicSwitch is not provided, or use all “0” or all “1” FDRA if resourceAllocation = dynamicSwitch is provided. In this case, the UE does not consider the DCI format as indicating an active DL BWP provided by dormant-BWP or by first-non-dormant-BWP-ID-for-DCI-inside-active-time, if any.
  + FFS: When DCI Format 1\_1 is scrambled by CS-RNTI

Prepare TP(s) for clarification to remove unintended limitations on Type-3 HARQ-ACK codebook usage (when no NNK1 value was received, when the UE is configured with semi-static codebook) until 4/29

[100b-e-NR-unlic-NRU-HARQ-02] Email discussion/approval on following issues related to Type-2 enhanced HARQ-ACK codebook by 4/24; if necessary, followed by endorsing the corresponding TPs by 4/30 – David (Huawei)

* How to determine NFI, number of requested groups and PUCCH occasions i(g) and i((g+1) mod 2) when multiple DCIs provide these values
* How is T-DAI interpreted in DCI 1\_1 for the non-scheduled group when two sub-codebooks (for TB and CBG) are configured
* Second HARQ-ACK information generation in case of toggled NFI for the non-scheduled group in a DCI scheduling PDSCH for another group

[**Enhanced Type-2 HARQ codebook (A7): T-DAI interpretation in case of TB and CBG sub-codebooks for the non-scheduled group.**]

* Clarify that codebook generation procedures in 38.213 clause 9.1.3.3 are applied separately for the first sub-codebook and the second sub-codebook
* Handling of T-DAI for the non-scheduled group
  + Alt0: as in 38.213 v16.1.0
  + Alt1: Clarify that a UE is not expected to generate HARQ-ACK information if T-DAI for the non-scheduled group in DCI 1\_1 is smaller than T-DAI received for any of the two sub-codebooks (TB, CBG) in earlier DCIs scheduling the same group if NFI was not toggled for the group.
  + Alt2: Introduce 2 additional bits for T-DAI field in DCI format 1\_1 when *NFI-TotalDAI-Included-r16 is configured* and PDSCH-CodeBlockGroupTransmission is configured for at least one serving cell, i.e. T-DAI is provided for the non-scheduled group for both sub-codebooks
  + Alt3: UE is not expected to be configured with *NFI-TotalDAI-Included-r16* when PDSCH-CodeBlockGroupTransmission is configured for at least one serving cell

Proposed conclusion:

No clarification is needed. TS38.213v16.1.0 clause 9.1.3.3 tells the UE to use the T-DAI signaled for the non-scheduled group for both sub-codebooks of the non-scheduled group.

[100b-e-NR-unlic-NRU-HARQ-02] Email discussion/approval on handling of SPS with enhanced dynamic codebook and with NNK1 by 4/24; if necessary, followed by endorsing the corresponding TPs by 4/30 – David (Huawei)

##### Configured grant enhancement

**R1-2001657** Feature lead summary on NRU configured grant enhancement Moderator (vivo)

[R1-2001537](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2001537.zip) Maintainance on the configured grant procedures Huawei, HiSilicon

[R1-2001655](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2001655.zip) Remaining issues on the enhancements to configured grant vivo

[R1-2001708](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2001708.zip) Remaining issues on the configured grant for NR-U ZTE, Sanechips

[R1-2001762](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2001762.zip) Discussion on the remaining issues of configured grant enhancements OPPO

[R1-2001814](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2001814.zip) Remaining issues on configured grant enhancement for NR-U Sony

[R1-2001938](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2001938.zip) Remaining issues of configured grant for NR-U LG Electronics

[R1-2001975](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2001975.zip) Remaining issues for configured grant enhancement for NR-U Lenovo, Motorola Mobility

[R1-2001990](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2001990.zip) Enhancements to configured grants for NR-unlicensed Intel Corporation

[R1-2002034](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2002034.zip) Configured grant enhancement Ericsson

[R1-2002120](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2002120.zip) Configured grant enhancement for NR-U Samsung

[R1-2002162](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2002162.zip) Clarification on NR-U configured grant enhancement Panasonic Corporation

[R1-2002194](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2002194.zip) Remaining Issues on Configured Grant Enhancement for NR-U Nokia, Nokia Shanghai Bell

[R1-2002435](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2002435.zip) Remaining issues on configured grant enhancement for NR-U NTT DOCOMO, INC.

[R1-2002533](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2002533.zip) TP for Enhancements to configured grants for NR-U Qualcomm Incorporated

[R1-2002633](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2002633.zip) Remaining issue on configured grant for NR-U WILUS Inc.

**R1-2002737** Feature lead summary#2 on NRU configured grant enhancement Moderator (Vivo)

R1-2002745 Summary of prep email discussion on NRU-CG Moderator (Vivo)

[100b-e-NR-unlic-NRU-CG-01] Email discussion/approval on following issues by 4/23; if necessary, followed by endorsing the corresponding TPs by 4/28 – Rakesh (Vivo)

* RRC value ranges for RRC parameters
* Correction related to semiPersistentOnPUSCH
* Clarification on offset-r16
* TP on CG-UCI transmission

[100b-e-NR-unlic-NRU-CG-02] Email discussion/approval on following issues by 4/24; if necessary, followed by endorsing the corresponding TPs by 4/29 – Rakesh (Vivo)

* PUSCH repetition transmission related issues for NRU configured grant
* RV determination for CG repetition

**Proposal1:**

* Discuss the following TP as starting point, including whether it is necessary given that similar text has been captured in 37.213

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===================TP for 38.214 6.1.2.3.1================

6.1.2.3.1   Transport Block repetition for uplink transmissions of PUSCH repetition Type A with a configured grant

\*\*\* Unchanged text is omitted \*\*\*

For both Type 1 and Type 2 PUSCH transmissions with a configured grant, when the UE is configured with *repK >* 1*,* the UE shall repeat the TB across the *repK* consecutive slots applying the same symbol allocation in each slot, except if the UE is provided with higher layer parameters *cg-nrofSlots-r16* and *cg-nrofPUSCH-InSlot-r16*, in which case the UE repeats the TB in the *repK* earliest consecutive transmission occasion candidates within the same configuration. For operation with shared spectrum channel access, where the UE is provided with higher layer parameters *cg-nrofSlots-r16* and *cg-nrofPUSCH-InSlot-r16*  and *repK>1,* the UE shall perform the transmission of the first repetition in the earliest transmission occasion for which the related channel procedure described in 37.213 is successful.A Type 1 or Type 2 PUSCH transmission with a configured grant in a slot is omitted according to the conditions in Subclause 11.1 of [6, TS38.213].

\*\*\* Unchanged text is omitted \*\*\*

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**Proposal2:**

* Discuss whether following TP is needed or not.

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If a UE receives an ACK for a given HARQ process in CG-DFI in a PDCCH ending in symbol *i* to terminate a transport block repetition in a PUSCH transmission with a configured grant on a given serving cell with the same HARQ process after symbol *i*, the UE is expected to terminate the repetition of the transport block in a PUSCH transmission starting from a symbol *j* if the gap between the end of PDCCH of symbol *i* and the start of the PUSCH transmission in symbol *j* is equal to or more than *N2* symbols. The value *N2* in symbols is determined according to the UE processing capability defined in Clause 6.4, and *N2* and the symbol duration are based on the minimum of the subcarrier spacing corresponding to the PUSCH and the subcarrier spacing of the PDCCH indicating CG-DFI.

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**Proposal3:**

* Discuss the following TP as starting point,

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The procedures described in this clause apply to PUSCH transmissions of PUSCH repetition Type A with a Type 1 or Type 2 configured grant.

If *cg-RetransmissionTimer* is provided, the redundancy version for uplink transmission with a configured grant is determined by the UE.

The higher layer parameter *repK-RV* defines the redundancy version pattern to be applied to the repetitions. If the parameter *repK-RV* is not provided in the *configuredGrantConfig* and *cg-RetransmissionTimer* is not provided, the redundancy version for uplink transmissions with a configured grant shall be set to 0. ~~Otherwise~~ If the parameter *repK-RV* is provided in the *configuredGrantConfig* and *cg-RetransmissionTimer* is not provided, for the *n*th transmission occasion among *K* repetitions, *n*=1, 2, …, *K*, it is associated with *(mod(n-1,4)+1)th* value in the configured RV sequence. If a configured grant configuration is configured with *Configuredgrantconfig-StartingfromRV0* set to *‘off’*, the initial transmission of a transport block may only start at the first transmission occasion of the *K* repetitions. Otherwise, the initial transmission of a transport block may start at

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##### Wide-band operation

**R1-2001940** Summary on maintenance of wide-band operation for NR-U Moderator (LG Electronics)

[R1-2001538](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2001538.zip) Maintainance on the wideband operation procedures Huawei, HiSilicon

[R1-2001656](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2001656.zip) Remaining issues on wideband operation in NR-U vivo

[R1-2001709](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2001709.zip) Remaining issues on the wideband operation for NR-U ZTE, Sanechips

[R1-2001763](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2001763.zip) Discussion on the remaining issues of wide-band operations OPPO

[R1-2001905](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2001905.zip) Remaining issues on wideband operation for NR-U MediaTek Inc.

[R1-2001939](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2001939.zip) Remaining issues of wide-band operation for NR-U LG Electronics

[R1-2001991](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2001991.zip) Wideband operation for NR-unlicensed Intel Corporation

[R1-2002035](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2002035.zip) Wideband operation Ericsson

[R1-2002121](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2002121.zip) Wide-band operation for NR-U Samsung

[R1-2002198](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2002198.zip) Remaining issues on Rel-16 NR-U wideband operations Panasonic

[R1-2002226](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2002226.zip) Remaining issues on Wideband operation in NR-U Nokia, Nokia Shanghai Bell

[R1-2002277](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2002277.zip) Remaining issues in wide-band operation Spreadtrum Communications

[R1-2002322](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2002322.zip) Remaining issues of wideband operation Apple

[R1-2002385](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2002385.zip) Remaining issues on wide-band operation for NR-U Sharp

[R1-2002534](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2002534.zip) TP for Wideband operation for NR-U operation Qualcomm Incorporated

**R1-2002722** Summary#2 on maintenance of wide-band operation for NR-U Moderator (LG Electronics)

[100b-e-NR-unlic-NRU-WB-01] Email discussion/approval on following issues related to RB set and intra-cell guard band configuration by 4/23; if necessary, followed by endorsing the corresponding TPs by 4/28 – Seonwook (LGE)

* Corrections based on RAN1 and RAN2 agreements, and for RB set index within a BWP
* Handling of the case where “no guard band” is configured, without considering signaling aspects

Agreement:

Adopt “updated TP#1” in Section 2 of R1-200xxxx (summary document v27) for Section 12 of TS 38.213

Agreement:

Adopt “updated TP#2” in Section 2 of R1-200xxxx (summary document v27) for Section 6.1.2.2.3 of TS 38.214

Agreement:

Adopt “further updated TP#3” in Section 2 of R1-200xxxx (summary document v27) for Section 7 of TS 38.214

Agreement:

R1-200xxxx [Draft] LS on intra-cell guard band configuration for NR-U LG ELectronics

Agreement:

For a DL cell without intra-cell guard bands

* The bit-width of available RB-set indicator (if configured) in DCI format 2\_0 is equal to 1
* UE does not expect to be configured with search space with *freqMonitorLocations-r16*

Does the above agreement need a TP? If so, it would be good to finalize this by 4/28.

Agreement:

To support UL bandwidth part wider than 20 MHz with no intra-cell guard band, UE can be configured with zero GBs by setting GB width to 0 when configuring intraCellGuardBandUL-r16 (e.g., such gNB creates 4 RB-sets in 80MHz UL carrier).

* Inform RAN2 of this agreement

[100b-e-NR-unlic-NRU-WB-02] Email discussion/approval on following issues related to CORESET and search space configuration by 4/24; if necessary, followed by endorsing the corresponding TPs by 4/29 – Seonwook (LGE)

* PDCCH candidate and CCE mapping for search space configured with *freqMonitorLocations-r16* (Note: Discussion on PDCCH dropping rule is deprioritized)
* Corrections for CORESET and search space configured with *freqMonitorLocations-r16*

Agreement:

Adopt the text proposal in Section 2 of R1-200xxxx ([WB-02] PDCCH\_ver19\_Moderator) for Section 10.1 of TS 38.213

Agreement:

The number of PDCCH candidates per aggregation level configured by *nrofCandidates* or *nrofCandidates-SFI* within a *SearchSpace* IE applies to each of RB sets configured by *freqMonitorLocations-r16*.

* *nrofCandidates-SFI* is 1 for a search space configured with freqMonitorLocations-r16

#### Others

[R1-2001764](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2001764.zip) Discussion on the other remaining issues OPPO

[R1-2002576](file:///C:\Users\eushako\AppData\Roaming\Microsoft\Word\Docs\R1-2002576.zip) Other Maintainance for NR-U Huawei, HiSilicon